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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/041,720	01/07/2002	Joseph J. Dlugokecki	20646-719	4175

7590 08/03/2004

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EXAMINER
CHAMBLISS, ALONZO

ART UNIT	PAPER NUMBER
2827	

DATE MAILED: 08/03/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/041,720	DLUGOKECKI ET AL.	
	Examiner	Art Unit	
	Alonzo Chambliss	2827	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 June 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-22* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-22* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *07 January 2002* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. The amendment filed on 6/7/04 has been fully considered and made of record in the instant application.

Response to Arguments

2. Applicant's arguments filed 6/7/04 have been fully considered but they are not persuasive.

3. Applicant contends that Dlugokecki does not teach a lapping process using an abrasive lapping wheel. Dlugokecki teaches a lapping process using an abrasive lapping wheel (i.e. dental burr) to remove encapsulant from a chip (see col. 6 lines 40-60). A dental burr inherently has a wheel in order to rotate the head of the drill.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-4, 8, 9, 13, and 21 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Dlugokecki (U.S, 5,318,926).

With respect to Claims 1, Dlugokecki teaches deconstructing an integrated circuit package for exposing a wire bond pad and a lead frame located therein in

col. 6 lines 24-68 and col. 7 lines 1-15. Attaching a die 62 to exposed wire bond pads of a lead frame 65 so that the die 62 is electrically connected to the lead frame 65. The die 62 and wire bond pads are encapsulated by an encapsulant 82 and reshaping of the upper surface of the encapsulant 82 where at least a portion of the encapsulant reshaping is performed by a lapping process using an abrasive lapping wheel (i.e. dental burr) to remove encapsulant from a chip (see col. 6 lines 40-60 and col. 7 lines 16-68; Figs. 4-8). A dental burr inherently has a wheel in order to rotate the head of the drill.

With respect to Claims 2 and 3, Dlugokecki teaches wherein lapping is performed by ablative lapping process (i.e. a process to remove by cutting) and mechanically (see col. 6 lines 47-66).

With respect to Claim 4, Dlugokecki teaches wherein encapsulating the die 62 and the wire bond pads results in the encapsulant 82 having a convex or concave an upper surface, and reshaping the encapsulant 82 results in the encapsulant 82 having a planar an upper surface (see col. 7 lines 51-65; Figs. 5 and 8).

With respect to Claims 8, 9, 13, and 21, Dlugokecki teaches wherein lapping is performed using a planar abrasive surface (i.e. mechanical grinding or dental burr utilizing a wheel to initial the motion of the grinding), chemical etching, or plasma etching (see col. 6 lines 47-68).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claims 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dlugokecki (U.S. 5,318,926) as applied to claim 1 above, and further in view of Minamio et al. (U.S. 6,680,220).

With respect to Claims 5 and 6, Dlugokecki fails to disclose marking the upper surface of an encapsulant that is sufficiently flat to permit labeling by mechanical marking techniques to simulate a production transfer molded encapsulated IC package. However, Minamio discloses marking the upper surface of an encapsulant 6 that is sufficiently flat to permit labeling by

mechanical marking 12-14 techniques to simulate a production transfer molded encapsulated IC package (see abstract and col. 8 lines 23-46; Figs. 8A, 8B, 9A, 9B, 10, and 11). Therefore, it would have been obvious to incorporate a marking on the upper surface of the encapsulant of Dlugokecki, since the marking would label the type of semiconductor device manufactured after the transfer molding process as taught by Minamio.

8. Claims 7, 11, and 15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dlugokecki (U.S. 5,318,926) as applied to claim 1 above, and further in view of Capote et al. (U.S. 6,566,234).

With respect to Claims 7, 11 and 16, Dlugokecki both fail to disclose wherein lapping is performed using laser ablation. However, Capote discloses wherein lapping (i.e. process of removing a material) is performed using laser ablation, plasma, chemical etching, a drill, or photo imaging (see col. 8 lines 55-60). Thus, one skilled in the art at in light of Capote would readily recognize combining any one of laser ablation, plasma, chemical etching, a drill, or photo imaging, since all of process remove encapsulant and the combination would improve the time needed to remove the desired amount of encapsulant from a semiconductor device. Therefore, it would have been obvious to substitute a laser ablation process for the mechanical process taught by Dlugokecki, since the laser ablation would facilitate the removal of the encapsulant material from the surface of the semiconductor device as taught by Capote.

With respect to Claims 15 and 17, one skilled in the art would readily recognize in light of Capote utilizing the combination of mechanical and

electromagnetic ablation or the combination of electromagnetic and chemical ablation process with the process of Dlugokecki, since the combination would effectively improve the time needed to remove the desired amount of encapsulant from a semiconductor device.

9. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dlugokecki (U.S. 5,318,926) as applied to claim 1 above, and further in view of Tani et al. (U.S. 6,080,602).

With respect to Claim 10, Dlugokecki fails to disclose wherein lapping is performed to permit more than one package to be lapped at the same time. However, Tani discloses lapping is performed to permit more than one package to be lapped at the same time (see Fig. 3D). Thus, Dlugokecki and Tani have substantially the same environment of lapping an encapsulant material. Therefore, it would have been obvious to incorporate lapping of more than one package, since the lapping process would decrease the lapping time and reduce the cost of making semiconductor devices as taught by Tani.

10. Claims 12, 14, 18-20, and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dlugokecki (U.S. 5,318,926) as applied to claim 1 above, and further in view of Wensink (4,384,917) and Capote et al. (U.S. 6,566,234).

With respect to Claims 12, 18-20, and 22, Dlugokecki does not explicitly discloses wherein lapping is performed using a gas that has an ultra-fine particulate using a high pressure and a pulsating liquid jet containing a particulate material under high pressure. However, Wensink discloses wherein

lapping is performed using a gas that has an ultra-fine particulate using a high pressure and a liquid jet having some level of pulsating (i.e. based on the flow of liquid through the jet pump) that contains a particulate material under high pressure (see col. 2 lines 42-51). One skilled in the art at in light of Capote (see col. 8 lines 56-60) would readily recognize combining any one of laser ablation, plasma, chemical etching, a drill, photo imaging, or any other method known (i.e. gas jet, ultra-fine particulate under high pressure, pulsating jet, or liquid jet) to one skilled in the art, since all of process remove encapsulant and the combination would improve the time needed to remove the desired amount of encapsulant from a semiconductor device. Dlugokecki and Wensink both have substantially the same environment of utilizing a lapping process to reduce the thickness of an encapsulant material on a semiconductor device. Therefore, it would have been obvious to one skilled in the art at the time of the invention to incorporate the jet lapping process into the process of Dlugokecki, since the jet would facilitate rapid and safe of the reduction in the thickness of an encapsulant material on a semiconductor device as taught by Wensink.

With respect to Claim 14, One skilled in the art at in light of Capote (see col. 8 lines 56-60) would readily recognize combining any one of laser ablation, plasma, chemical etching, a drill, photo imaging, or any other method known (i.e. mechanical) to one skilled in the art, since all of process remove encapsulant and the combination would improve the time needed to remove the desired amount of encapsulant from a semiconductor device

The prior art made of record and not relied upon is cited primarily to show the process of the instant invention.

Conclusion

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning the communication or earlier communications from the examiner should be directed to Alonzo Chambliss whose telephone number is (703)

306-9143. The fax phone number for this Group is (703) 308-7722 or 7724.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-7956

AC/August 1, 2004

Alonzo Chambliss
Patent Examiner
Art Unit 2827